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# Outbound offending: The journey to crime and crime sprees

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The city has long played a central role in environmental criminology, from analysis of offender residences in cities to identifying crime hot spots and patterns of urban and suburban crime. However, other crime patterns, with links to the city, can also be observed. Some ethnographic analyses have noticed patterns of criminals heading for affluent target areas near to, but clearly outside, city boundaries. The aim of this paper is to take this exploration one stage further by analysing these crime trips that start in a city – in this case Brussels – but end outside it. This pattern – outbound offending, as we call it – is examined in two ways. First a descriptive and bivariate analysis of outbound property offences is executed. In this part of the paper we aim to find out whether this crime pattern is worth further exploration and what its main features are. All outbound offender–offence pairs are considered. In the second part we explore possible explanations of outbound offending. As we particularly wish to focus on offenders who deliberately choose this offending pattern, we examine the behaviour of ‘structural’ outbound offenders who commit at least 90% of their crimes outside the district of Brussels, while residing in the city itself. The features of these offenders are briefly compared with the findings of the first part, after which a logistic regression is executed. Outbound offending being the dependent variable, we use a number of independent variables that recur throughout criminological literature as linked to mobility: maximisation of (expected) profits, risk reduction, ease of access, professionalism and co-offending.

## 1. Local offending

Since the early 1980s, the criminology of place has gained a new momentum. Whereas traditional criminology tries to explain crime and deviant behaviour from various perspectives, environmental criminology does not question reasons for motivations, and instead assumes crime is rational behaviour (see Cornish & Clarke, 1986b). Criminal behaviour is therefore based on choice, although sometimes criminals are not totally aware of the choice they make (Canter & Youngs, 2008, p. 14). By referring to routine activities theory, we observe the need for a motivated offender, in combination with a suitable target and the lack of capable guardians (Cohen & Felson, 1979, p. 588). We do not examine motivation itself, but instead we explore the convergence of these necessary precursors. Environmental criminology does not investigate why one person engages in criminal activity and another does not, but studies the environmental clues that facilitate criminal behaviour. As the location of the offence is six times more predictive for crime than the identity of the offender (Sherman, 1995, pp. 36-37), the criminology of place becomes an interesting domain for criminologists.

A number of criminologists focus on the issue of place and its possible crime facilitating or inhibiting factors (e.g. Patricia Brantingham & Brantingham, 1993; Brown, 1982; Buettner & Spengler, 2001; Newman, 1976; Reynald & Elffers, 2009). Others, like

ourselves, pay more attention to the converging process of perpetrator and target, which results in the study of criminal mobility.

As this paper focuses on offender mobility, it is the distance between offender residence and offence location that matters. A number of other studies have also explored this issue, and have found that the average distances between residence and offence location are rather small. The first observation of this kind was made by White (1932, p. 507), who found a mean distance travelled of 1.35km for violent offences and 2.8km for property offences. Other authors described similar findings, ranging from 0.8km (Reppetto, 1974), over 2.3km (Phillips, 1980, p. 175) to 6.6km (Edwards & Grace, 2006, pp. 223-224). Capone and Nichols (1976, p. 209) concluded that average distances differ not only according to crime type (see also Hesseling, 1992), but also in relation to the type of premises where the offence occurs. Notwithstanding these variations, the average distance travelled to commit a crime is quite modest.

Many crimes are committed in cities. Many persons – including offenders – live there and, through their population density, cities also provide large opportunity structures for crime to occur (Pyle, Hanten, Williams, Pearson, & Doyle, 1974, p. 34). As a result, most crimes are committed close to home, while criminal activity diminishes when the distance increases. Thus, an offender commits fewer crimes as the distance to his home increases. This has been termed the distance decay function (Phillips, 1980; Rattner & Portnov, 2007; Rengert, Piquero, & Jones, 1999; Van Koppen & De Keijser, 1997) and has been observed in other disciplines as well (e.g. Mizutani & Jewell, 1998; Snow, 2008; Tobler, 1970).

The distance decay function provides the best technique for analysing journey-to-crime patterns (Kent, Leitner, & Curtis, 2006, p. 183). It has also been used effectively as a basis for geographic profiling, in which the offender's home area is derived from the location of offences (e.g. Canter, 2008; Canter & Youngs, 2008; Kocsis & Harvey, 1997; Rossmo, 1997, 2000; Rossmo, Thurman, Jamieson, & Egan, 2008; Van der Kemp & Van Koppen, 2007).

## **2. Travelling criminals**

As has been said, most offences take place within a limited distance from the offender's residence. Crime trips into unknown territories are relatively rare (Van der Kemp & Van Koppen, 2007, p. 353). This has been observed both on the aggregate and on the individual level (Rengert, et al., 1999). However, despite a traditional focus on local offending, a number of authors have pointed out that certain criminals do travel further.

Morselli and Royer (2008) found offender mobility to be linked with criminal earnings, and encountered a number of highly mobile offenders. Because of their different approach, they do not calculate journey-to-crime in a traditional way. Thus, their observed mobility patterns appear less striking in relation to other studies. A careful reading of other studies reveals that a minority of offenders are indeed mobile. Patterns of mobile offenders have been observed and are often taken along in differentiated offender typologies. Herein, perpetrators offending in a circle around their homes are called marauders, whereas those travelling to other regions are referred to as commuters (Canter & Larkin, 1993; Kocsis,

Cooksey, Irwin, & Allen, 2002; Meaney, 2004; Paulsen, 2007). Yet, mobile offenders too have incentives to leave known territory (Van Koppen & Jansen, 1998, p. 231).

Crime travelling is influenced by three main issues. First, expected profits, second, the expected risk and third, the ease with which the target can be reached (Bernasco & Luykx, 2003; Goodwill & Alison, 2006, p. 397; Steventon, 1996, p. 238). The ease with which a target can be reached is either an attraction – otherwise known as spatial attractiveness (Rhodes & Conly, 1981, p. 170) – or a barrier (Elffers, 2004, pp. 185-186). When targets are located nearby they become spatially attractive, and when they are not, they are subject to an additional barrier.

Guerry found that crimes against property were generally more common in towns than in rural areas, but he also acknowledged that enough exceptions exist to rule out a hasty conclusion (Phillips, 1972). Newton and Swoope (1987) distinguished mobile offenders from static ones. Maguire and Bennett found a close relationship between burglary rate and urbanisation. However, some wealthy towns prove to be interesting exceptions to this rule (Maguire, 1982, pp. 19-20, p. 32). This offending pattern has been described as ‘the search’ (Bennett & Wright, 1984, p. 43; see also Rengert & Wasilchick, 1985, p. 66). Similar to this typology, Cromwell et al. (1991, p. 50) describe the ‘journeyman’ in their offender typology. Instead of coincidental convergence of offender and target, this typology is based on deliberately searching for criminal opportunities. This has been picked up again by Mawby, who described this phenomenon as ‘rich pickings’ (Mawby, 2001, p. 72). In a more recent study on Czech burglars, Polisenska (2008, p. 57) found that defining a crime as being committed close to home may be subject to perception (see also Paul Brantingham & Brantingham, 1984, p. 346). In other words, one criminal may consider a certain distance as ‘far’, while another sees the same trip as ‘short’. She also found that some burglars travel further than we might expect. This differs from the strategy of most burglars, for whom burglary is a crime of opportunity and, as a result, they will be less likely to commit crimes in affluent areas (Bernasco, 2006, p. 152; Johnson & Bowers, 2004, p. 238; Malczewski & Poetz, 2005, pp. 516, 523; Van der Kemp & Van Koppen, 2007, p. 353).

Despite the fact that a number of authors have observed this type of offending, there has been limited interest in this crime pattern and most research focuses on local offending. This may partly be due to the fact that travelling to commit a crime is more the exception than the rule, but other issues may play a role as well. Mobility can sometimes be wrongly attributed if the anchor point of the offender is wrongly identified (Wiles & Costello, 2000, p. 35), or if there is no fixed anchor point at all (Rossmo, 2000), making it more difficult to assess criminal travelling and distinguish it from routine mobility. Also, much travel associated with crime is not primarily driven by criminal intentions and occurs towards regions that have strong connections with cities (Wiles & Costello, 2000, pp. 43-44). Through these connections, directional bias plays a role next to travelled distances (Costanzo, Halperin, & Gale, 1986; Rengert, 2004).

### **3. Data and method**

This paper studies offenders who will travel to commit a crime despite the extra effort it entails, and attempts to identify what makes crime travelling worthwhile. It analyses these

mobile offenders, but aims at a certain degree of generalisation and quantification. We focus on mobility rather than affluence, and this forms the basis of data selection. However, we acknowledge that those travelling to affluent locations will probably make up a substantial part of the analysis. We consider outbound offending where the criminal lives in a city, and has sufficient crime opportunities near home but does not offend there. This analysis is applied to the district of Brussels. We examine the relation between outbound offending and a number of elements that are found in literature to correlate with target selection and high offender mobility.

The following research questions are addressed in this paper:

- 1) What is the proportion of outbound offending?

Many research papers on crime and mobility limit themselves to studying intra-city crime travelling; we want to know what proportion of crime trips that start in cities are neglected by this approach.

- 2) What elements favour outbound offending?

Cities provide great opportunities for crime: they provide a large concentration of potential targets and offer a great level of anonymity. What advantages do other areas have to make offenders leave this attractive crime setting and head somewhere else to commit offences?

In order to answer these questions, we first provide descriptive statistics, followed by bivariate statistics. Finally, a logistic regression is executed.

### *3.1. Data*

We analysed all serious property crimes (all property offences with aggravating circumstances) in Belgium with known offenders for the period 2002–2006. This information was extracted from the General National Police database, the main police database for nationwide crime statistics in Belgium. The database provides information on both the crimes and the perpetrators. We wanted to eliminate any errors in identifying anchor points as much as possible (see Wiles & Costello, 2000, pp. 40, 45), though we realise some mistakes are inevitable.

While home is often considered the normal anchor point, two main difficulties arise. First, multiple residences were registered for some offenders in the database, and it was impossible to determine their precise residence at the time of the offence. Thus, offenders with multiple residences were excluded from the analysis.

Second, residential mobility is only one reason why anchor points might be wrongly identified. Other anchor points may be as important to the criminal as their residence (Bruinsma, 2007, p. 485), with the result that their starting points for criminal activity may vary. We tried to reduce this bias in two stages, because we wanted to identify as many ‘structural’ outbound offenders as possible. First, only offenders who had committed five or more offences were taken into account. This excluded offenders who had committed one or two property crimes but had not become regular property criminals. Second, we classed offenders as structural outbound offenders when they committed at least 90% of their crimes

outside the Brussels district. In this way, we excluded any offenders who showed a mixed pattern of offending. For example, 15 offences can be attributed to offender A. As he has committed more than five offences, he falls within the first scope of analysis. However, he would only be considered a structural outbound offender if he had committed 90% of his crimes (in this case at least 14 out of 15) outside the Brussels district, meaning he could only have committed a maximum of three crimes within the Brussels district.

The result is a dataset of 735 offenders who have committed five or more offences and live in the Brussels district, with only one registered residence. They had committed 5,500 offences, which led to 6946 offender–offence pairs. One should take into account that only solved crimes are considered as the offenders are known. This might well influence observed mobility patterns. Some authors have formulated the hypothesis that mobile offenders are less likely to get caught than local offenders (Eck & Weisburd, 1995, p. 16; McIver, 1981, p. 43). As a consequence, our results would underestimate the proportion of mobile offenders.

We then consider a number of offender and crime location features, which are derived from criminological literature and indicate higher mobility. Crime location characteristics are measured at municipality level. Although this can be criticised for not being a small unit of analysis (Oberwittler & Wikström, 2009), one should realise that crimes in the whole region of Belgium are considered, and thus, our area of research is still divided in 589 units. Moreover, for mobile offending, decisions may be based on general perceptions about target areas, as it is less likely that offenders know the area in detail beforehand. As such, municipalities provide a suitable level of analysis for our research.

- Wealth of target areas: Following previous research (see above), referred to by some as ‘rich pickings’ (Mawby, 2001, p. 72), we would expect outbound offenders to head for more affluent areas. The ‘wealth’ of each area was assessed using a ‘affluence index’, that is designed by the National Institute for Statistics and uses values such as mean income and housing value to categorise it. The mean index for Belgium is 100, so every municipality with an affluence index over 100 is classed as wealthy. We also take into account the ratio between the target area affluence value and the criminal’s residence area affluence value; the level of wealth in their own community may influence a criminal’s perceptions of the affluence of other regions.
- Co-offending: Two or more criminals carrying out a crime together do not commit their crimes at the geographical mid-point between where they live. On the contrary, they are likely to offend near the anchor point of at least one group member (Bernasco, 2006, p. 147). Thus, offenders whose companions live outside the Brussels district may be likely to operate outside the district as well.
- Professionalism: as offenders learn from their previous crimes, they become more professional over time (Van Koppen & Jansen, 1998, p. 234). In addition, a certain degree of professionalism increases the range of operation (Barker, 2000, pp. 65-66).
- Accessibility of targets: some targets are more easily accessible than others. Accessibility is affected both by distance and by the transport system (Rephann, 1999, p. 373). The more escape routes there are from a potential target, the higher its chances of being victimised (Hakim, Rengert, & Shachmurove, 2000, p. 12). For mobile offending, the use of motorways drastically reduces travel time to the target area (Fink, 1969; Laukkanen, Santtila, Jern, & Sandnabba, 2008, p. 232; Maguire,

1982, pp. 41-42; Rossmo, 2000, pp. 190, 214). In our sample, we use a two-step approach. First, we considered the proximity of motorways to the criminal's home. Second, we considered whether criminals use their most obvious route out of the city – the motorway that would take them out of the Brussels district as soon as possible. Not all criminals travel by car and are thus able to use motorways. Yet, these motorways run largely parallel with the main public transport lines, as such symbolising all major transport paths.

- Success rate: the risk of detection also plays a role in selection of target area (Bernasco & Luykx, 2003, p. 986). Therefore, criminals may be willing to travel further if the risks of detection are lower in the more distant area (Lu, 2003, p. 423). We conceptualise 'risk' in its most basic sense here – the chances of arrest, which can be measured by comparing the number of offences without known offenders, with the total number of offences in each area. This measure is rather abstract, yet it is nevertheless objective.
- Criminal earnings: as criminals are more concerned with the rewards than the relative risks of their undertaking (Hakim, Rengert, & Shachmurove, 2001, pp. 134-135), earnings are expected to be at least as important as differences in success rate. Where criminals travel further to commit a crime, the rewards are often higher as well (Morselli & Royer, 2008), and thus further offences tend to net a greater return (Rhodes & Conly, 1981, p. 167). Unfortunately, our dataset provided no information on criminal earnings. We therefore used an alternative measure of those who committed two crimes or more at locations that are closer to each other than to the criminals' residence, within a period of eight hours. This meant that they did not have to travel home between crimes. This suggests that, although the earnings rise by committing more offences, the costs stay more or less fixed.

Although often used as a dependent or independent variable, we only consider distance in our descriptive analysis. The reason for this is twofold. First, distances will mostly be smaller for inbound offences, as the theoretical maximum distance is about 11km for offenders staying within the Brussels district. Second, we agree with Groff and McEwen (2006, p. 43) when they state that other, qualitative aspects may reveal more information than strict travel distance does.

Our analysis uses offender–offence pairs to describe outbound offending in general. The use of these pairs is not new (also see Bernasco & Block, 2009; Hodgson & Costello, 2006; Kleemans, 1996). We first consider outbound offending in general, i.e. all offender–offence pairs that start within Brussels and end somewhere else.

In order to focus on structural outbound offending, we then examine those outbound offences committed by offenders who travel beyond Brussels to commit at least 90% of their crimes. We use the individual offender as unit of analysis, and distinguish structural outbound offenders from the rest. As two-thirds of journey-to-crime variation is situated on the offender level (Smith, Bond, & Townsley, 2009, p. 232), we believe this approach to be suitable. Moreover, this analysis focuses on those offenders for whom outbound offending is a structural element of their criminal behaviour and therefore focuses on deliberate (though perhaps subconscious) motivations for outbound offending.

### *3.2 The backcloth*

The district of Brussels consists of 19 municipalities (one of them being the municipality of Brussels). The borders between these areas are mainly administrative: Brussels can be considered as one city, and its various entities are not clearly distinguishable. We acknowledge these borders are not constructed for purposes of research designs (Weisburd, Bruinsma, & Bernasco, 2009, pp. 19-20). However, given the available information on municipality level and the focus on mobile offending, we believe analyses at municipality level to be sufficient.

The Brussels district, the capital of Belgium, has just over 1 million inhabitants spread over 161.4km<sup>2</sup>. The population density varies between 1,869.8 inhabitants per km<sup>2</sup> and 21,622.7 inhabitants per km<sup>2</sup>. Each area has been awarded an affluence index, for which the Belgian average is 100. Within the district of Brussels, these indexes range from 51.8 to 113.8. Seven areas have an affluence index above the average. Thus, even within the Brussels district, a large variation exists.

The district is surrounded by a motorway ring road, so it is easy to reach the motorway from any part of Brussels. The southern part of the city is the only area where the ring road is located further away from the city. Moreover, a number of important motorways come together at the Brussels ring road, allowing easy access to the rest of Belgium.

In the neighbourhoods where these motorways reach Brussels, people may tend to travel in a particular direction. Ten of the 19 areas are located near to these motorway nodes. Four areas (Ganshoren, Sint-Agatha-Berchem, Koekelberg and Sint-Jans-Molenbeek) are located in the north-west, and people there have an easy route towards Ghent and the Belgian coast on the E 40 motorway. Residents of one municipality, Brussels itself, tend to travel towards Antwerp, either on the A12 or the E19 (which are parallel roads, one is an old main road, the other a newer motorway). People from three areas (Evere, Schaarbeek, Sint-Lambrechts-Woluwe) can easily travel eastward towards Liège on the E40, and those from Watermaal-Bosvoorde and Oudergem can travel south-east, in the direction of Namur and Luxemburg.

## **4. Results**

### *4.1. Outbound offending in general*

Offenders living in Brussels were responsible for 6,946 offender–offence pairs. As the offender–offence pairs are used, these outbound offences are both committed by structural outbound offenders and occasional outbound offenders (for which outbound crimes make up less than 90% of their offences). Of these pairs:

- 3,372 (48.5%) were ‘outbound’ – crime trips that started in the district of Brussels and ended outside it. Of these, 447 (13.3%) trips ended in a area adjoining the Brussels district.



- 2,111 (30.4%) were subject to mobility within the Brussels district – i.e. the offender travelled outside his area of residence but stayed within the district.
- 1,463 (21.1%) were local – the offender did not leave his own area to commit his crime.

It is clear from this that outbound offending makes up a substantial proportion of the data set of serious property crimes, and is therefore worth exploring further. Even if we eliminate crime trips to adjoining areas, over 42% (2,925 crimes) of all these crimes can be classed as outbound offences.

The term ‘rich pickings’ is apposite in many cases – the target areas of outbound offenders had a mean affluence index of 106.9, compared with 82.0 for the non-outbound offences. Outbound offences started in areas with a mean affluence index of 76.1, compared with 76.7 for the other offenders. Thus, although their anchor points do not differ drastically, their target areas do. It is possible to target affluent areas within the Brussels district, but offenders that commit crimes in their local areas appear less likely to do so than the outbound offenders.

In general, mobility positively correlates with the wealth of the target’s neighbourhood ( $r=0.28$ ;  $p<0.01$ ). However, when we consider only outbound offences, we observe a negative correlation of  $r=-0.60$  ( $p<0.01$ ). Thus, it appears that outbound offenders are likely to look for affluent regions in the more immediate surroundings of their anchor point, and if they travel further they have other reasons to do so. This applies to both structural ( $r=-0.43$ ;  $p<0.01$ ) and other ( $r=-0.58$ ;  $p<0.01$ ) outbound offenders.

One possibility may be that these offenders travel further because they start their crime trips near to the anchor points of any accomplices. Some 76.2% of the outbound offender–offence pairs are committed with others, whereas this is the case for ‘only’ 56.5% of the pairs within the Brussels district. Thus, outbound offending is more likely to be the work of several people at a time ( $\chi^2=300.0$ ;  $df=1$ ;  $p<0.01$ ). However, this only reveals that co-offending is linked with outbound offending (Cramer’s  $V=0.208$ ;  $p<0.01$ ); it does not reveal any information on the anchor point of the accomplices. The next question, therefore is whether the accomplices are likely to live outside the district or not. For co-offending, 66.9% of outbound offenders have accomplices who do not reside in the Brussels district, meaning their residence is located outside the district or is unknown. For offences within the district of Brussels, this is even higher, at 69.7% ( $\chi^2 = 4.0$ ;  $df=1$ ;  $p<0.05$ ). Thus, although co-offenders appear to be more likely to travel to commit their crimes, there is no clear evidence that this is caused by their companions living outside the district.

We first measured ‘professionalism’ by the total number of offences committed, and found that outbound offender–offence pairs are more likely to have a professional/experienced offender involved (27.52 crimes per offender on average) than other pairs (9.59 crimes per offender on average). Travelled distance is correlated with number of offences ( $r=0.287$ ;  $p<0.01$ ). This mainly reflects the differences between outbound and within-district offending, but shows no strong correlation within each group ( $r=0.06$ ;  $p<0.01$  for within-district pairs;  $r=-0.03$ ;  $p=0.05$  for outbound offending pairs). As we only included offenders who had committed five or more offences in our analysis, the correlation between the number of crimes and the distance travelled to commit them may explain why we found such a large proportion of outbound offending in the first place.

Special attention has been given to accessibility of the target areas. As the effort put into travelling to the crime is higher for outbound offending than for offences committed within the Brussels district, we would expect offenders to compensate for these efforts by using more effective means of transport. Motorways cross nearly half of all Belgian municipalities (288 out of 589; or 48.9%). Thus, if the crimes were equally spread, fewer than half would be expected to be committed in such an area. However, 75.4% of outbound offences are committed in these areas. Outbound offenders are therefore likely to use motorways as a more effective way of transport.

Whether they are as likely to use the same motorway as their starting point (i.e. as the fastest way to get out of Brussels) is less certain. Only in 13.2% of the outbound offending cases (26.6% of the outbound offences located near a motorway) is the motorway that is nearest to their target the same as the motorway that is situated closest to the area where they live. Thus, although motorways do function as a more effective means of transport, they are not necessarily used to leave the home district as soon as possible.

Success rates, or the risks of detection, have also been studied. Travelling increases the effort needed to commit a crime, and thus leads to higher costs. Higher earnings might compensate for the cost of travel, and committing a crime in an area where the risk of arrest is reduced (which is more expensive to the criminal than a few extra litres of petrol) would certainly seem to. Thus, if mobile offenders have more success (lower levels of detection), the effort they have put in to get there could be worthwhile. However, we found that while outbound offenders have a success rate of 0.90, for offenders who stay within the district of Brussels this increases to 0.97.

A final element is serial offending, which we use as an alternative measure for criminal earnings. For offences within Brussels, 12.1% formed part of a 'crime series' (crimes committed within 8 hours of each other). For offences by outbound offenders, 41.8% were part of a crime series. This figure overrates the true level of serial offending, as it also includes offences as series when various acts can in fact be considered as one crime, for example a burglar breaking into a garden house to take a ladder, which then he uses to break into the house. However, even if we exclude these offences outbound offending still includes 28.7% serial offending, compared with only 6.1% for offending within Brussels. Thus, outbound offenders are four times more likely to operate in series and reduce the extra costs by committing several crimes. Serial offending is also more likely to occur in affluent areas (36.8% series) than in poorer areas (17.5% series).

Thus outbound offending is likely to occur at targets that are wealthy, to be carried out by more experienced offenders and co-offenders, to form part of a crime series and to be located near motorways. However, this does not mean that outbound offending involves features that would offset the effort of travelling. Within outbound offences, wealth and travelled distance are inversely correlated. Co-offending does not explain outbound offending such that offences would be committed near the anchor point of another offender. Although motorways are used, they are not necessarily those motorways that provide the quickest exit from Brussels. Finally, the chances of success do not seem to play a major role, as the chosen target areas have lower success rates than the more immediate environment has.

#### *4.2. Structural outbound offending*

Some 128 of 735 offenders were structural outbound offenders and responsible for 2178 offender–offence pairs. We will use the previously described measures to explore whether there are any substantial differences between structural outbound offending and occasional outbound offending.

The average affluence rate of regions targeted by structural offenders is comparable with that of occasional outbound offenders: 107.5 (107.2 if we take into account all offences of this offender group) versus 106.9. They do seem to travel a little further, as only 8.0% of their outbound offences are committed in a municipality adjacent to Brussels, compared with 13.3% for outbound offending in general.

In total, 81.3% of their outbound offences were committed by two or more offenders. These offenders have committed 17.0 offences on average (the individual offender is our unit of analysis). Some 72.2% of offenders commit their crime near a motorway, and for 14.4% of offenders this motorway is the same as the one they live close to. The average success rate for the areas they operate in is 0.89, and 51.7% of their offences form part of a series of offences.

Offenders who commit outbound offences in a structural way do not follow any fundamentally different patterns than occasional outbound offenders. It is true that they travel slightly further, commit more offences on average, are more likely to stay near the motorways, are more likely to operate in series and even manage to target areas where they are more successful. However, the differences compared to general outbound offending are quite modest. No additional element can be found in the data set to indicate why structural outbound offenders favour outbound offending.

#### *4.3. Logistic regression*

Our next step was to execute a binary logistic regression. Here, we consider structural outbound offending at the level of the individual offender. As each offender has one residence (those with multiple residences were excluded from analysis), offender and residence features were easy to calculate. For the other variables – which were target and offence related – we used the percentages of crimes that were committed within a region that is affluent or not, successful or not, and so on. This results in some loss of information, because a range of values is replaced by just one central value. As we are attempting to explain the general tendencies of offenders – factors that make an offender (nearly) always head for targets outside the home area – we believe that the loss of information is not significant. Moreover, despite the confined loss of information, the main advantage of this approach is that it weighs all offenders as equal and therefore does not overestimate the patterns of multiple offenders. What this model therefore explains is the odds of an offender becoming a structural outbound offender. We divide these features into four groups. First we look at the wealth of a target area, because we observed large differences in target area affluence between outbound offending and offending within the Brussels district. Second, we look at features relating to success, as we would expect offenders to operate in regions they think of as ‘safe’ (from arrest). Third, we study accessibility as measured by motorways, and finally some additional background features are taken into account.

The result of this regression is shown in Table 1. The Hosmer and Lemeshow test was not significant, the model thus showing a good fit ( $\chi^2=2167$ ;  $df=8$ ;  $p=0.98$ ). The relative  $R^2$  of Cox and Snell (0.45) and Nagelkerke (0.75) show that the model explains a substantial part of the encountered variation, resulting in an overall correctly predicted percentage of 93.9%.

Table 1: Logistic regression of structural outbound offending

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
% affluent target areas	1.75	.54	10.47	1	.00	5.78	2.00	16.71
Affluent residence area	-.50	.61	.67	1	.41	.61	.18	2.01
% high success target areas	-5.64	.57	97.68	1	.00	.004	.001	.01
High success residence area	-.39	.62	.39	1	.53	.68	.20	2.30
% target areas near motorways	2.13	.68	9.99	1	.00	8.44	2.25	31.66
Residence area near motorways	-.96	.43	4.92	1	.03	.38	.16	.89
% near same motorway	-3.33	.84	15.61	1	.00	.04	.01	.18
Number of crimes	.05	.02	5.57	1	.02	1.05	1.01	1.10
% of co-offended crimes	.96	.58	2.74	1	.10	2.60	.84	8.07
% of crimes in series	3.06	.73	17.68	1	.00	21.40	5.13	89.26
Constant	-1.14	1.18	.93	1	.34	.32		

The largest positive effects were found for affluent target areas, target areas that were located near motorways and the number of crimes being committed in series. The largest negative effects were found for success rate of the target areas and the target and residence being located near the same motorway. For co-offending and features of the area of residence, effects were less or not significant.

## 5. Implications and discussion

The aim of the study was to assess the influence of the environmental setting on outbound offending, focusing on offenders who are rather atypical in their criminal behaviour. Although there was a large variation in levels of wealth in different areas of Brussels, we only found small differences in the wealth of areas where criminals who operated locally lived, and the neighbourhoods of those who were outbound offenders. This has been extended in our binary logistic regression. Offenders were not more likely to become structural outbound offenders when they lived in poor areas or areas with a low success rate. In fact, the features of their home region are irrelevant to determine outbound offending. The ‘criminal opportunity’ perspective (see Cohen & Felson, 1981) therefore fits best. This was to be expected, because the measures we used were developed for use in opportunity structures (Bernasco & Luykx, 2003; Goodwill & Alison, 2006; Steventon, 1996).

Success had a negative effect on the likelihood of criminals leaving the Brussels district to commit crimes. On the contrary, if offenders would have wanted to operate in areas where the chances of arrests were lower, they would not have to travel far at all. Two issues are taken into account. First, we calculated the success rate in its most objective way – i.e. the chances of arrest in a certain area. It is unlikely that offenders can make this judgement for themselves very easily. Any perceptions they have about their chances of success are more likely to be subjective than objective (Matsueda, Kraeger, & Huizinga, 2006).

Moreover, previous research has demonstrated that offenders are more likely to make changes when choosing their actual target than they are in deciding on the target area generally (Tillyer & Kennedy, 2008, pp. 76-77). This brings us to the second issue: our level of analysis. It has been noted by Rengert and Wasilchick (1985) that offenders first head for a target area, and look for a suitable target once they arrive. Rengert and Wasilchick (1985, p. 55) called this the search space, of which the space where the criminal activity occurs is only a subset. Other authors have made this distinction as well (Bernasco & Luykx, 2003, p. 986; Cornish & Clarke, 1986a, pp. 3-5). In this paper we looked at mobile offenders, who, it was assumed, would need to make the initial step of selecting a suitable area more deliberately. Taking into account the findings from other researchers that offenders pay more attention to the expected profits than to the risks they take (Hakim, et al., 2001, pp. 134-135), and that criminals base their perceived likelihood of success more on the features of the individual target, rather than the wider area's perceived likelihood of success (see above), attractiveness can be expected to play a more crucial role than an area's success rate does.

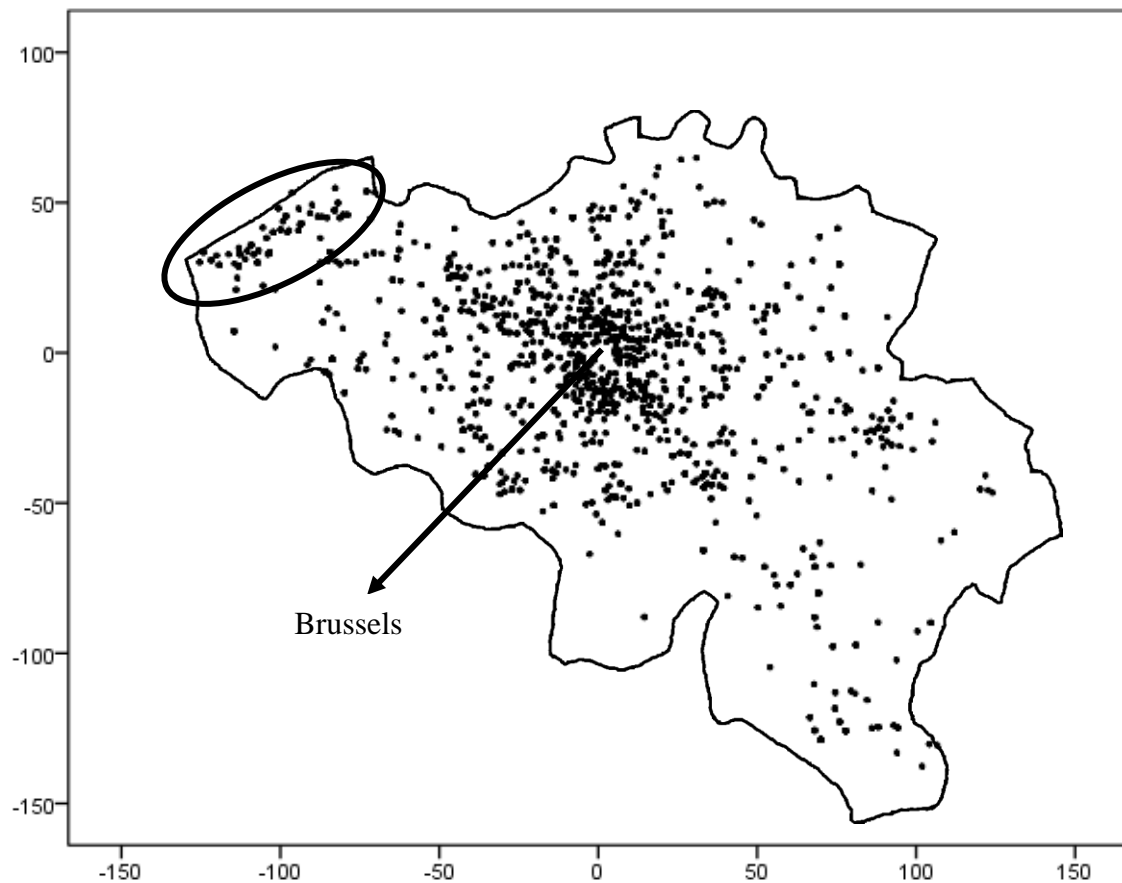
We did observe a negative correlation between success rate and the affluence of target areas ( $r=-0.34$ ;  $p<0.01$ ). Therefore, the negative effect of the success rate may be linked to the importance of affluence over success. Yet, one has to be aware that success rates could also be influenced by differences in reporting rates between urban and rural areas.

Structural outbound offenders are more likely to commit crimes near motorways than other offenders. This confirms the expectation that outbound offending and the costs this brings are compensated by using efficient transport routes. However, this does not mean that outbound offenders also lived near motorways, and when the criminal's residence and his target were located near the same motorway, the chances for structural outbound offending substantially decreased. Nevertheless, it is important to take into account that offenders operating in the same area as their residence have no need to use the motorway; thus, the odds of a criminal using the motorway near to his residence are biased by this measure.

Carrying out several offences in a short space of time has a large positive effect on the odds ratio and is linked to structural outbound offending. Although we used this as an alternative measure to estimate earnings, it is also possible that this is another example of a more effective means of transport. If one only travels a route once to commit three offences, one can travel three times as far and still be as efficient, even if we only consider travel time and costs. Additionally, the risks of apprehension during travel, crossing of physical (Elffers, 2004) and social borders (Reynald, Averdijk, Elffers, & Bernasco, 2008) and planning activities (Johnson & Bowers, 2004, p. 243) are also divided by three, and at a later stage storage and selling efforts per crime become lower as well. As such, the benefits of serial offending may be greater than expected, and may make it a lucrative and worthwhile approach.

The analysis does not control for opportunity structure by means of population density (see Pyle, et al., 1974). We do acknowledge that opportunity structure certainly plays a role in offending patterns. Yet, implementing it here would enclose a major flaw. If the patterns of the studied offenders would be largely influenced by opportunity structures, they would have had no reason at all to travel outbound. After all, they live within such a major opportunity structure. A t-test shows that offenders in our sample not being considered structural outbound offenders – for they have committed less than 90% of their crimes outside Brussels – commit their crimes in areas with an average of 7,022.26 persons/km<sup>2</sup>, while this is only 823.27 persons/km<sup>2</sup> for structural outbound offenders. Thus, offending outside Brussels in itself makes opportunity structures less important. Yet, future work could elaborate on the role of opportunity structures within the pattern of outbound offending.

Our data does not allow us to differentiate between type of offence. Thus, we are unable to define whether outbound offending is the result of particular crime attractors (see for example Wiles & Costello, 2000, p. 46). Yet, we believe the effect of these attractors in our analysis to be negligible. First, outbound offenders travel 41.99km on average (even 45.41km if we consider each individual crime). As this distance is quite large, chances are low that particular small-scale attractors such as shopping malls would play a major role over these distances. Only larger attractors could play, for example the seaside which can be considered a large leisure area. In Figure 1, we have drawn a scatterplot of all outbound offences encountered in our sample in relation to the distance to Brussels. It shows indeed that the seaside (indicated on the top left) is a common area for outbound offenders. This suggests what Wiles and Costello (2000, p. 43) stated, namely that crime travelling often has no deviant intentions in the first place. Next to the seaside, however, we notice outbound offences being equally spread around Brussels. As such, except for the seaside, no particular crime attractors are observed at the macro-level.



By focusing on outbound offending this paper examines an often-neglected offending pattern. It uses a number of area indicators. Although previous researchers have mentioned such offending as a typology in ethnographic research (see above), this paper links them with opportunity-related variables. Outbound offending can be considered criminal commuting and shows that criminal commuters, although often travelling towards opportunity structures, may sometimes choose to do otherwise.

A number of future improvements could be made. This paper uses data at the municipality level. As outbound offending involves travelling to new areas, these data are sufficient to reveal substantial differences. Nevertheless, future research could elaborate further using neighbourhood-level data and/or characteristics of the individual targets. This approach would allow us to study the changing role of certain levels of analysis as distances increase.

Another step could be to elaborate further the role of short-term serial offending, investigating which issues play an important role, what the advantages and disadvantages of such an offending pattern are, or how this influences crime travelling in general, independent of whether this travelling occurs towards or from cities. Although offending sprees have been used in this paper as an alternative measure for earnings, it could also be studied in itself. The same can be said for the use of motorways. While we used the proximity of motorways to measure accessibility, the role of motorways or other means of transport could provide useful information in the study of criminal mobility.

## 6. Conclusion

This paper examines outbound offending, or crime trips that start in a city but have a target outside that city. Because of the distances involved, we considered data at municipality level. Although most studies focus on intra-city offending, we observed that nearly half of the crime trips that started in the district of Brussels were outbound, indicating these often-neglected crime trips are worth examining. Even if we exclude those trips that ended in areas adjoining the Brussels district, over 40% of the crime trips still involved outward travel.

The term ‘rich pickings’, previously used to describe this type of offending, appears to be appropriate as this type of offence is consistently targeted at more affluent areas. In order to eliminate any coincidental outbound crimes, for example due to a short stay with friends/family outside the district, we further focused on those offenders for whom outbound offending was a structural characteristic (i.e. 90% or more of their crimes were committed outside the Brussels district). We found the wealth of the target areas was an important indication, but other issues played a role as well. The feature that appeared to have the greatest impact was that of offending in series, which does not belong to either one of the three characteristics mentioned in previous literature and was used by us as an alternative indication for criminal earnings. A follow-on question is, therefore, how serial offending contributes to travelling – should we view it as a redistribution of travel costs or a multiplication of earnings per trip, or is it merely a indicator of the higher professionalism of these offenders and offender groups?

Co-offending was highly likely among outbound offenders, though this could not be attributed to crimes being committed near the residence of the other offender. Thus, although offender groups are likely to travel further, our findings do not confirm that this is linked to the different anchor points of the group members. More important, perhaps, was the fact that offences were more likely to be committed at locations near large motorways. Thus, next to affluence, accessibility plays a role in outbound offenders’ choice of a target. This is congruent with what we expected from previous research. However, we found that success had no positive effect on the odds for outbound offending. Whilst this may partly be due to our objective measure of success – which takes no account of a criminal’s subjective perceptions about individual targets – it is surprising that it is completely subordinate to the attractiveness and accessibility of the target.

While offending patterns are often studied within cities, this paper shows structural outbound offending patterns to be worthy of study. Moreover, even this large proportion may underestimate mobile offending, as our data involved solved crimes and mobile offenders are expected to be caught less. If this is the case, mobile offending patterns may be as common as intra-city crime trips, standing up for more research on these rarely examined patterns.

In addition to making up a large proportion of outbound crime trips in general, the offending pattern appears to work to a different logic to near-home offending: profit maximisation and travel effectiveness are priorities, rather than cost and travel minimisation. Neglecting to study these trips means this difference is missed, as is the possibility that offenders may use very different ways of reasoning and still be considered rational offenders. In sum, there is more variety in offending pattern principles than is often assumed.



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